DECEMBER 1945

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To Delta Air Lines Elebe important frature articles .... Benissing on page 112 Fifteen pages of Aviation's Necessaries Netrheak Erglaning on page 197 Commence and Operators of some report.

Analysing the Aspects of Person Flight, II

C. E. Papper and M. G. Harrison. 150

Standards Engages Still Faces High Hardins ...... S. C. Soultes 167 Barch Markatan C-P Prope for Low Tempower Sanges 4. Nerry Crowdl 203 New Profests and President Once Firms Sales School for Dealess Databatters . . . E. H. Stelmann 170

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Arthur Enungs Feak Sie North Off Reymond L. Reading 125

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AVIATION, Bussies, 1945



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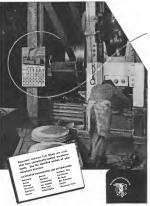
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AVIATION, December, 1946



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ON, December, 1945





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AVIATION, Incomber, 1945

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AVIATION, Becember, 1945

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FOR BIG-PLANE ELECTRIC POWER SUPP

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protection for expansive devices and reacted descentions for resistences to Sort circuit, so matter how account, just con't "go places" and de descape.

Development for the E-29, this O-E system has

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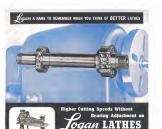
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for presures up to 1,000 mg, and static presures to 20,000 mg, sk. Test Mochines for Fuel Parmer. Yacsum Puress, Medinsulis Puress, Gas Turbine (Set Prepulsion) Engines, and Fuel Bootler Pures (Thomps con-Green & Hedraulic Meters & Hedraulic Power Units

AVIATION, December, 1967







Radio, abstracts and order empressed in necessarily delease in construction and accountry preside as in hacospoing. The encessors record-framess, first made on proper, which recording into sensitive horse blanch consider on state on finite delications. Lard expresses, the most appearanced to the field of subrance, have access to the norm empowers, was mant superstanced to that place of verticosts, bases across in the acut file of experimental drow and seem similars of prevailant experimental (i) convertions, and it have the largest manufacture of morestings, vil of exchange these Type Bunded Euchées energy one engagement for their species, conditions is that to detect. and energy one engineered for the specials, conditions it has to interf.

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the enjoyment of endis and interaction at home; all depend on the efficiency of constitution
and the property of the condition of the control of the condition of the control of the control





otors of Shear Type Banded Rubber Mousti



Now that he's back-

People who knew how before segon extinuous for the new account, proving 

Test common persones to send up

DBS - Pottstown, Pa.

correspondence before notes, revising the title best any country could have, the of Republic Industrial, Inc.



Proved by true of thousands of hours of the touchcut hand of yor flow. PESCO Feathering Parism ability that is assembled. The papers model crafteness to provide a compact, auxiliary hydrauhe peep unit for propeller furthering that remonds by remote central, with split-second realiness, to the pilet's wishes. This pump is typical of the mean motor driven ireleastic summe that PESCO has developed for confines energies of anyrift norts. All of them

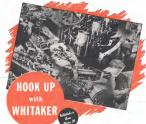
transm. Pressure Loudine, an exclusive PESCO

development that compensates for wear and the thereal varieties broude shout by the wale these purpo court quests, Pressure Londing automatically maintains represent clearance heable continuous high operating efficiencies under all conditions. Write for description foldow on Motor Driven

Hadaraka Passas ta PESCO Products Co. (Dist.) son Boss-Warner), 11619 Exclid Avenue, Greehad 6 Ofer.

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ing small motors may prove valuable to your enumeering department.











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rus uses: A carrier based combat plans combining the advantages of let propulate for peak performance...plus piston-engine and propeller power for

short take-off and long range. THE EXPERTS said "it can't be done." But the Navy and Rean, working together, tackled the problem

THE RESULTS The meet accounted application of jet propulsion. The cole lot place which can operate from alcoral corriers. New bush performance—superior managementality, speed

 Rest combination of describis fighter characteristics, each Demendous emergency power when both sogmes are used . Advantages of two-engine simplens in single-seging configu-

. A close which gives pilot combat advantage at all times. NAM ASSOCIATIONS CONTANT . SAN DISCO.





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und fattwacer, transcring only 37s.
25°, White A fine of the freety, wrights
are calculated flows consensational disreservoir and longit an accuracy as from published fabries of theoretical words. Not the bound of the control of

REYNOLDS METALS COMPANY
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Finan and no, without charge, a Reynolds Mende

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# Teacetime payloads are going 4º

Air-borns commons will now eithinterpidly to its desired bildy blace in global trade, for aminist silveryl, wehors and perfected in war, will play as ever mere apported part in this ascendancy of passerime commercial sensition. For whether they he pasmenter are energy, poplosis go up with play Austranced Tois—house paylondgo up - . . . and so do produc. That is what kinemes the energies with

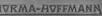
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iron. Inquiries from responsible from Associate.

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# AIRCRAFT CONTROLS

dopa, NORMAN Spioneered many of the inposition bearing types on ecception of a student innition practice. "" Today, abund every representative hulder of security, suppara, inclusion, and equipment—in-clocking the United Status Observations—in-position-in-clocking that United Status Observations—in-position-in-clocking that United Status Observations—in-position-in-clocking and instruction of the Computer of the Computer of the Euclines are large like the computer of the computer Euglines of the Computer of the Computer of the Euglines of the Computer of the Computer of the Euglines of the Computer of the Computer of the Euglines of the Computer of the Computer of the Euglines of the Computer of the Computer of the Computer of the Euglines of the Computer of the Computer of the Computer of the Euglines of the Computer of the Computer of the Computer of the Eugline of the Computer of the Com

PRECISION BALL ROLLER AND THEOST BEARING

NORMA-HOPPMANN BEARINGS CORPORATION, STAMFORD, CONN. U.S. A

ANTATION: Develop, 1917

# GEAR SHAVING ACCURACY AND FINISH!

WHERE GRAD DELIVED IN CERTIFICATION surface accuracy with greatest economy. it mays to set additional cutter protection from the hubest quality outline finds

You can get the protection with S/V the country, these outstanding oils are pour shaving cutters, Here's why:

secont that they are obtaining phenoredreds of cutting edges on each cuttur

the exact motion fluid for your jert-

Sultran rela. Year Spensy, Vancour Ber-SCHOOL OF OLD COMPANY, INC. Div. - Wedness Div. - Magnetic President





SAVES WEIGHT INCREASES AIRCRAFT PAY LOADS SAVES GEARING

Marris another ETMCO several design Senante rest-drives engenting and sources pounds An EEMCO source-opponent on an ex-

The mean more greaken (extending cruming







# Torture chamber for tires means safer landings for planes . . .



### B. F. Goodrich Silvertowns prove they can take it before they take off

TANDENGS are big moments in sirplane eiges' leves . . . snoments when they have to take the shock of many tons multiplied by pleasy m.p.h. If they're B. F. Goodrich Silversowes, they're ready to take it . . . with less to snore. Shown here are some of the B. E. Goodrich technicisms "land" tires inside a building. They're smacked down with

great force against a high-speed dynamomour and braked until the malti-ton flywheel corner to a suco. This "landing" is repeated time and again with circlet wear and performance checks all the way. Then there are sent for bruise resistance, best resistance, foregre resistance, and others These are some of the ways B. F. Goodrich maker mee Airphae Silversowas are kept up to tenserves's standards-always reads

and faster planes. The B. F. Goodrich Conhave derenatived Direction, Abron. Obva.

STREET TEST | Water to ferred into a S. S. Goodwick time. The pres-



B.F. Goodrich

and the talk is found down outs a good and and order standing recently. FIRST IN RUBBER



OF SIXE OR TYPE OF PLANE

The complete adoptability of the new Bondin' disc brake is most conviscoint evidence of the second engineering and Accept-Now here in one compact, should design, coupleying the same principles of contraction, in a healt that beings maximum backing observance to all types and some at places. Ranging in the from t be, to 31 discount for the contraction of the con In this new Bender due broke, the secons, which are the best absorbing And of partirelet respectance to plane measurfactures is the fact they this new dwo dauge effects a considerable weight sociation is what and havin moreoidy wheels recome many recommend and effected operation. Between of this new, better fieldig Bode will be monthed as required.

Bendix PRODUCTS DIVISION MINDEX AVIATION CORPORATION . COURS MIND IN INDIANA

Enters the month in companies beatened of a year

# CONTROLLED ATOMS or CONTROLLED LIVES

YENCE August 6th when the first storac bemb was TENCH August 6m when the first state of the American people have Diren subpected to a continuous horrege of pro-

and tout in the hair of political balence that holds it Frees this point up, we need the coolest and most carefully considered judgment that can be brought to render whelly usuable a delicately retricate position

The resion outlines of that problem new are comen

discovered bow to turn it late a maltary explosive in-

ver in convenience with the national destructivement. The ton would be at best an answer of bellow effect. Ass

enormous adventure, a nation actuated by a ruthless of an amony an 20 thousand atomic bombs would not person the strooghers of the world to an extent that 4. The problem is further complicated because, so for as we know now, any large-scale consecretal me-

able resterns, which would need further elaborate and 5 In solition to the mider problem posed by the use materials with which they are insided, faces still an-

whole world Although we were importantly sided in its development by the nationals of other countries, we, We have only two choices. We can try to learn this the includer of other rations to moster the scientific reaternals. The cerbs delecte as over whether it would take such an atomic race were on, we have no reason to beattempt to cope with the neithern of living in a world in bear talk of depercing our ottes and even of moving under continuously mountain tensen day after day, and

petitive production of storce weapons, we abould be lauredone facilities, of occasio ker undertral establish-

Before we correct ourselves to any such testolerable The Only Prayible Alternative Is Effective

This cardwal proposels has been recovered in the statement of November 15th, sound jourly by Presiadvancement of stance and other peaceful and incomichange of basic susception adormation for penceful arxie Already criticum is leveled at the worden of the statement, at alleged organism, at the wasdom of choos-

What matters is that an invitation has been sursed in

this starvel would provine to lost only for an enega-

request more of attento energy, it is difficult to concern of



RIGHTORIUM

# Reconversion to Re-Complacency?

FIG. 10 SERVICE Army-Navy-Laurence report on the - who have done brilliant work in research and developnaghly competent study and its features deserve high consuculation. Its reconsumulations envision a deldrome, which may last through 1946. Wheely at

But that donne's mean that we should voluntarily rafin-

A THE MODELLY IN HEITOR'S THE MAN AND THE WAY OF BOTTOM We do vides to with a temporary security, hence for a little avastion redustry is simply an involution to other nations.

Laured which we love so well. We know it is the best In the links of these cold truths it sooms secole looks

one of ruided marales and atomic bombs. Let us, in Let us do all these things first. Then let us work

Yeslie E. Turles

# Here is the ALLIED BOMBING RECORD

and critical supplies, and attacker of

In the stock by Alfred alreaver,

and 2,660,000 fighter section were reached a peak of some 38,000 and at



\* This "result rending" entitle, based as the United States Strategic Booking Survey, contains asserted parts of a military critique—first in history to be written by civilians, sharely defining a completely As important, however, is its precise renon-facilities of the future. reception in unexplanted terms the receipts and for a national notice. of confinced, coordinated serenscripel research and development,-

Nevertheless, at the end of hostileses and price of rabble. German industry charge. No one should assume that, Interniturion of Hitler's surviving

about after 1933. Hoter based to built of divisions, in new materials and base were to be equipped and ready to

the world, inserty by stating strapery

The success of Haler's strategy

AVIATION, December, 3NO

declares to make this attack was taken invisioned always with the fact that cording to plan, was to be a benef four-

compared with 676,000 nons in 1944

were diverted to support the North

In the spring and early spraner of

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1943. it street Hawkurg in perhaps

and German estimates show 60,000 to Germany out of the user. The RAP In the latter half of 1996, anded by tion—as a whole it contrast to in-

Commencing in the service of 1944.

(Turn to Near 262)

# FASTER, MACHINING **LOWER COST**

when cutting fluids...



NATIVES the motal or the and practical field applications . . . W method of machining, you and each is least absent of advances can cur fasors, better, and more ecoin escallargy and machinese endmirrors by the constitution work of Solable Oils. These superlative con-The Texas Company's sort of reting fleids not only being you the search chemists and engineers.

benefits beadlined, but aware more A Tixaco Engineer specializing ciks per sool grind, less downtime in cutting coolants will gladte help you improve your machining pro-There is a complete line of est of more than 2500 Toxaco disto improve the efficiency of a partictributing triones in the 48 States, or ular type of curties. Each has been write to The Terras Company developed through careful research IM E 42nd St., New York 17, N. Y.

In Ondonia Sandharina P.S. Mildon.

2- Sames responsibly product read



**AVIATION'S** 1945 ANNUAL MAINTENANCE ISSUE

### FOR TARLE OF CONTENTS MAINTENANCE FEATURE SECTION

MAINTENANCE **AWARDS FOR 1945** 

To Senton Art Ures So Dulte Air Unes

Montanana System Mempanya Packer Unit's Efficiency

Make These Mines Extends Proc Off in Second and Basses ATIC Munteness Never High Depths In Spencespins .....

Nervy A. Surier 122 125 James J. Realests and Manage Worker 121

AVIATION'S MAINTENANCE

SPECIAL

ARTICLES

MAINTENANCE

Auction See Present Sewar Oil Lookees

TEXACO CUTTING, SOLUBLE AND

### AVIATION AND AIR TRANSPORT

# 1945 MAINTENANCE AWARDS

These, the 9th Azzgol Maintenance Awards, are presented as a tribate to the usuang members of the airlines proundcrows, the mon and weenen who have worked untiringly and empettighted to make immensurable contributions to the constartly seenter schoduled oir tronsport patety and efficiency, underly and efficiency which have mede America's air secriors unscralleled as a witel meet of the notice's victoriess wer machine

AVIATION AIR TRANSPORT

as well as its secretime economy.



For subtanding realisteness performance and development by an either operating more than 10,000,000 revenue pleasuriles as. EASTERN AIR LINES and in Majetanene Department broaded by Hubert G. Ledby



This year AVIATION is more than broad to be joined in making the Meintenance Awards by 4ts compenson publication, AIR TRANSPORT, An has always been the case, these awards one made an the basis of the decision of the fedore, take report that every sidne in America has every right to be more than fromi of the autotanding mark of the

systematics maintenance performance and developments by an aidine operating up to 10,000,000 revenue plane-miles an-DELTA AIR LINES

erd Its Melintenance Department handful by G. J. Dre.





# Retraining Is the answer

## AS MAINTENANCE "GOES DIVERSE"

By ALBERT G. THOMAS. Management Project Superstandard and ALLAN MERKIN, Manhaman Salamanan Salam State Street, No. San Sandara

Different types of craft the airlines are now acquiring, after the ione war years, brise pointed problems—of mechanic re-training and of they re-planning to attain afficient simultaneous performown of discretified metabonases. Many's how \$6.6's Atlantic Dis-

A the buddone of alifting service— table the problem. For though it carry wore breathy apprinted to—be have policy for a carrier to study

(2) Ladders for estrance facilities not trucks, shocks, and other auditors

AVIATION, December, 1942

And while other sirflines, in the male different in kind her, rather different Atlantic Drv. have been DC-4s (C-\$4's

> ATC Despites DOM (ferrograph), Broom BETA (upper contac), renner of cody (SC-4) place having various different nove-

generators on early were required for resident in the selection of 28 lay-American Dw at Masse Another



# Extent of already at maintenance are required in PAA's Albert



modified to strively new accessories fires acceptable to servicing all trace of craft onercased in the Atlantic Dir., mocketo-rach as a lavorable sectionprocedure for the specific craft, In this Service as medianas' handbooks. Leatures, coupled with received one was not aside for a sufficient seriod craimer, thus coordinately the theory receiver force proper-numbering mg general and special aspects of the over NO-s survey was conducted to new craft.

accornitio arrow recourse. Some were grouped according to appeals anytrated an ability to pass on knowlspecial emphasis placed on standard procedures as securified in the comenterive observation by a job study Another encudention in the recei-

When finally assisted to un encoun-

Alter-study of shop facilities rehand, propeller alon manneagon was

remediate transition to DC-Vs. are also being applied to Douglas E-27's Arterio Dry for executing any life-

rooms that its acquisition will find



# Maintenance Principles

Boycon has en annual in health

FOR GAS TURRINE IFT ENGINES By JOHN FOSTER, JR., Managine Editor, "Antalian"

New type power plents bring new techniques regainlys special train-

is association the pater unit is to its during post-everland assistable as a







distinctibled. Special balanciar are: with the tower possible engine is obable, expable of absences unbalances of read amounts of clay an necessary to force 4 to 6 great-in for each COI in get the readings within the allowed ing machine, place a small piece of celler, that is hand-field out of the

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processor, continue rawing the thy proper belance.

reading and, if the readings above on- nint as a whole checked to more



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cading engines, great care must con-

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ther reflect costs by re-working, edgebarbly skilled and soremous mastesuits should have to difficulty taking Although for angus subsent reaso are feetingly amade

AVIATION, December, 1942

# MAKE THOSE MINOR DETAILS

# PayOff in Speed and Range By MAJOR THOMAS H. BONSER. Multi State Seast, ACEC, Woods State

with a resolvent decrease on already officiency. Mechanics, in their arrive ads and momer reclasses. When the only desired other words, the clinileast possible resistance or dear. As

lies pip is your place, here are practical ties as acceduantly afficleacy-what gets it down and what'll halld it back up. harden. High speed arresult must be when an surplana's speed is doubled executor colets of already malescance cleat, and they constituence provided a supercoller when most seeded in stood that any draw would become In the category in coeffice we have combat. Of course, the same type of eight-times greater in an airclane whose efficiency would be reported in corn-

Here fort and how for a place flier can demand as much some the se-colled succeedary considerations of finish and classifican or upon performescs of the circraff's major assessiles. To melatale stream-

that the Genman V-2 rectut book

second an aurolane waries as the cube mercene of 9 cmb, and the airolane has











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Filter should be becaused for fit and under-



Chail fit and traffices of Associate doors.

AVIATION, December, 1945

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And new let us outline some

5 Day't spely margan cracad or

6. Don't walk on wings with nailed Don't lee down cowing panels or once, using constremals clean, if posfulfilly with enternal side draws. They wild practice results in appainture which

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others a considerable degree of in-

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5. Breeck and reft all lauding ever 10 Remove all treased or unneces-

othe under combat conditions. Hawamothed by bold water stadies with

Proper pursue action will said up r warm climates, constitue a nerv





# Check the Plane AND YOU Check the Costs



Preparities in impacted for Maniatan,

TITE THE ALMEST CENTAGE ISSUdally and pre-flight impections has be-

form at a nervinest place, or down, that majories this is in long elect form at a nervinest place, or down, that accounty check to amone that putch is "OH?", then plat of "par" (Ariethe Stuff platter)

AVIATION: December, 1945

benefiting of the construction and

peller. Send gracks in a woodblack's

Hub returning lock or boltz, ngts. Impertion Under Cowling

By HARVEY A. SENIOR, World & Senior Investor, Young Dry., Gold Absorb. Mosy dellars is subsequent repairs can be saved if persent place oweers exercise core in their delly sed pre-flight lespections. The procticel methods detailed here cover this work on both place and ergine



Class windshield and unassed for unables and wrother haldness of subtra cratics alone. All types of propellers should be

checked for track. This is seconsnections, or guidetted connections. leakens should be given opportune

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checking for tieleness of attachments

AVIATION; December, 2340



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### Wings, Central Serfaces, Passings

White on the ground, respect surface Remove inspection covers and check rightness of allores controls by having alaron is beld. Note particularly Chick leading and traffing along of dison. Look toe fulete cracks and

and top and major evadents, he miss a based like the above. Left hand entires de-Office spaces and first place 25th, 100 de. ing evertual and major eventual, respec-Hody, Parelline 1846, Juney Seer agent puriods account for seriefines in recorded connections should be inspected. Wine reduct some and around he banks,

BETTER CHICAGO THE COL

THE DESIGNATION OF REAL PROPERTY. NAME AND ADDRESS OF THE OWNER, WHEN

E III COLOR DO TO THE The second second

# Steins Worm To

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The hattery does not usually regular

# atsc Maintenance Never Halta DESPITE ITS RECONVERSION

FIRST ATSC is at project under a

without perception enter one to interepublican cause desertrated with to

With an protesse at being enviting but accd soldlers. Middletown ATSC men are teking part in a billion dellar reconversion leb or e "sideline" to their real task at maintaining AAP aircraft as the world's most efficiently serviced military planes.







for the U.S. Array Air Forces And it both wheel and bridg copair. The its dendime, up spite of the "projecty ments rough a more difficult problem-

str of the reduced ergonaments. Under Through a skilled-personnel reduc- was in a department of its own, the new tion to 40 separat of that used during their well redeside all electrical works

pether into one department the operations forwerly conducted in three-

several describers sets one has not visited to be harded by a general allotted, each more revolding more

Derholms price of Despite C-54 manually fire used for heryang

Oreston it. Thus, week on whom

Two Lebensteries Combine Another combination permitted by With counties of hostillies, the

was able to operate in only a part of Serve profinel-during warting. fannerly assumed a large sublikition

building to Harrisbury, ten suites aware

be, while maintenance engineers in sgo Electrical has moved in with wines, which through her street mer unto redio lata as a sole line. While this was in process, enginee were still coechasied, show environment

Whereas arens states suchstane Long Kentucky, Michigan, Indiana, and tril be in overhanding contact shores metal started an extra-curricular many. well also be brought here. In addition,

Without posing as efficiency experts circuly serviced erose of military are.





Observed Field, or calle of these real and Officers Reserve in the District











Miles female stockies examine our modely extended, plant Fernance of Biglit And Asserts Separat California APC, the Building In now used for wandening sing applies. Parts and eccentric for



# Maintenance System Mainsprings PICK-UP LINE'S EFFICIENCY

By EDWARD E. THORP, Annual Stime, "Anaton" Headred-mile-par-hour hodge kepping for thessends of miles every

day sails for highly specialized maintenance backed up by this sirrole but effectively up-to-the-releate party time checking system

FIGURE 10 PROPERTY to Describ of off in hours executy as in the tree Conting which calls for such

pack-up operation imposes for greater collect that the part in to be replaced

Became even an adequate shop staff is provided to mobily it requiring with an index of the party agon to be

carrier all purposters, including

Sandar (1987) No. 1 (197) granter, (197) than print, (197) than debter, (197) skrater, (22) drall porm, (22) 42 in. Brein, (24) granters, (24) creary meabout for purch \$150cm. (26) 1,000, and 2,000 in centre.

Arr Kirling metal Baltims (31) afroit Sins, (32) Jacobing machine, (32) Senti (400 shock rook, 541) September green, (42) shell areas, 5423 wed reals. (48) deer sourteweights, (49) southfeatur unit (80 (87) alreading units, (88) Windoshelar destar, (88) gaves defined



### Sound of charge day is attracted to each past or ecoing realised Spect ander receips will real day until returned to steak. Tags at before are distrated and landled according to

Party time reports are made not delily and part to each descriment. Time

Daily arrestory from each depostment fulfile sention of manufalms



AVIATION. December, 1945

# TAKE CARE OF THOSE "Eyes"

By JAMES J. BODGERS and NORMAN HARLAN

The most eyes of the elist are often bandlessend by the discussed of his eirplene-desty, saretched, or distorted windshields. Here orn prevon methods for avaiding that bushner of many circum-

Wafespread acceptuace of trans-

odors. Ignite a sample, allow it to French Japactus View the 1924 a known piece of sould may and thick-

, If photic shorts became bowed due

rigidly, to many reterare desirable to retires normand senting unless

tough enough to protect

or date tables. If it is oppositely to

Por. 2 Sandar had minimile using days specifies percentate it. The specific gravity of

the mintare provides a age, hence is difficult to review, practically independent of the account

in the filter to sid lifting.

and range with firtillied water before Do not use graphen, benevan, andneing approved adjustives, such as



Fig. 4. Carred publics are dest white half No. 2. Make about the defined at insur reals over surface to be represed (top) and poage buttey bydrometr. on at 1.13

After theroughly serving the cement, adrounds vertification in executal he-

should be used. Methylene dublombs eyes, should be handled only with

to critisally indicated to

not available, a good cloth seeked to kere-

When managinary and remote in ests, their use should be availed. Use

Fig. 5. Holes are cut out beyond demap ababily below rarious of about Chi. James

The lettle updfor should be fal-900A, and 600A. Darrier such stern

> return when sanding with erous opposities to dissi-



AVEATION, Describer, 1948.

# Whipping Corrosion REFORE IT STARTS

By PAUL RATTILANA, Salu Murcey, Sci. Aroust Gree.

Preventive maintenance as both planes and fleets is less complicalled then it rounds. Actually, periodic inspection to queroston unleterrupted service can be assemplished with comperative sess.

firmer's a number of factors, such as you of word ports, waterpropalar case-fectory or in the field by fillow the pounds, standers steel pakins, and my. Dakes with a rest-proof infrience and by Edo Aircraft Corp., manufacturer, internal others. While it is simpler to of Edg floors and piggers builder of The ever-potent effects of salt water

Properties the Airpless

he form to would someting alie. (Ode Ac-

Abor \_

ing air dightness of tubes and weble. sure are applied to the familiage. If

In the case of simplemen already healt

aponed in the wing or feelings to creat maximum methodos. The

war to. The will induce that the

gives a good cost of sinc chromate At all low points of the where, face-

All exposed carts such as suffere.

Of the engine parts, the ranger stem-In pervice, the equation potential cor-

Mir risarge or paretons not coar 6 in Net was on stem here, is to remove polet

shed, however, the resident is neste-



Second stay in heir repoir is to not not







stices, it has been frund as actual procempler to barrache. The difference

primer and paint is applied. Care vide maximum corresponding. should be corrosed in acrobbear the With the still of a sund union removes.

parting, two other steps should be

Mesor sergage between buildheads as or surroyed with uner chromate against.

Before the paint is applied, a thin slabed by fiber removings with starrent, address of I end of clear

so the lacre rivet. In the twee of sixth- mg, hanking our, and when the aurplane fected, whole correspon sport actually be removed, the old som compound and materially in the hourth of the





First two steps are to apply size obscures compaced around links over with consultance-based companied and an economical disand some patch plats in place; that came patch and consuming whichese

AVIATION, Desmiter, 1945

# AVIATION'S MAINTENANCE NOTEBOOK

. Built from discarded eartes works and AA's Engine overheal dept: for mensuring expedited risg pay measuring and







STILL REGIATES 90 PERCENT \* Sering 1,200 out of every 1,500



RAISED OIL PAN MEETS FLOOR CLEAN drivator from envine, this reised you Saltimore, Md., to news aleaning time ofter preflight operations. Elightly





. Drestag eir through spece used by TWA to nedeguard

### SERVO EXERCISER HANDLES SIX UNITS

"For running in serve unite all old unito. Then payten red of appoints set of serves





RMHANCES CREE EFFICIENCY

servicing dock eachies a full repair orew



Wising a steel ring and suep anstead of



\* Deinz a light which chises through a



. Held together with tape when



DETECHANCE PLATFORM IMPROVES YMSTNE STAND this respecte aletters was deviced by Lewis Drecketed into tabing walded to edder of stand, tobuler supports. Weterials ere: 2 ft. of 1} for height regulation (ATSO photo)





ACCESSIBILITY IS PRAYING OF ENGINE ASSESSED Y STAND one pix in hirged cover, while year expect to an-Juntable vertically to accommodate veryous types of



ADJUSTABLE WING TIP JIG THRESHED RECEIP ALTEMENT

. Sougged with first Jecks, tymbuckie breces and servery-



#### SLOPING SHELVES

INFOVE INTERCET

a To prevent damage council by
pleading parts on tools on tap
of others invisible from in
front, Add's instrument shep
uses nighting shalves, equipped
uses nighting shalves, equipped
uses nighting shalves, equipped
uses nighting shalves, equipped
uses nighting the shalves, and
aliding. This simple measure
has resulted in complete
absence of damage, in addition
to prester cane in obsecting

#### SENSITIVE ALTIMETERS TESTED IN COMPACT

"Duing sealed chamber in which may scattling on a presence and temperature onto be spiled to the instrument being taxing. Ed. a instrument being taxing. Ed. a instrument being taxing. Ed. a instrument being taxing the spile and taxing the sealed through a solar range than that covered by the planes theselves. Manuse term at right give readings visible free position in Frost of instrument to testing chamber



#### ----W



#### FLGATING FASTERER FRENENCE PLATE SUCKLING \* To diviste furner buckling of plates in engine conding pacels. AbA uses larg

TIME-SAYING TIME REMOTIVE PROMOTES HOW SAYIT as a section difficulty and darps of resolute the process of the says of resolute the process of the say of t





TESTS ONL FLAPS a Rushling coul flago to be gil pempe are overetime. This Leak, has speeded final adjustoverbeal dept. in shown operat-



BY 3-BAY ADJUSTABLE STAND . Complie of editateont in every direction and economials from both sidem, this universal ignition bersess attend will handle any size



. This aluminum wheat, corrying rubber Luceyte came length and specing as fabric



## <del>▗</del>▊▗▊▗▊▗▊▗▊▗▊▗▊▗▊▗▊▗▊▗▊▗▊▗▊▗▊▗▊▗▐▗▗▊▗▊▗▊▗▊ █▗▊▗▊▗▊▗▊▗▊▗▊▗▊▗▊▗▊▗▊▗▊▗▊▗▊▗█<u>▗</u>▊▗█<u></u>



ONE SETUP ALLERON STAND HANDLES ADJUSTMENT AND COVERTING



RIGID CYLINDER STAND occarete floor, this cylinder



ELIMINATES FIELD CHECK

\*First company companyties as the signiage itself averheal completely, thick and compensate in the



THIS BATES CURTAIN . My monne of a collet obset of votor, which weekes alr and



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BATTERY CARY MAY BE

Pyrese extinguishers, AA's rubber-Light saight and ease of bendling place on agens or in hanger. while its compact construction enables it to be seved abere





SPRING FEED BRAKE LINENG UNIT HAS INTRIBUTE MICROMETER

\* Badially mounted staromater in Dee, sounted on struster table. is fed against granding sheel (in dust hood) by long busile (at left)

and suring, which is an editatable ston egainst grinding sheel. Depth sores at bottom, inside circular





assent taken from the roll, this aimple adoptation of a stendard sounter to reach!

# Nearing the speed of Sound with TIMKEN BEARINGS

When the world's forcer persons. the P-60 Shooting Star sooms area space, is comes closer to the seed of sewed then ony plane over built,

sendes down as safety and namely as nonworld's hest - marchites because made

The reasons for this pre-emissions are not hard to find. Unique engageering skill and

wether, and uncarelled Timber Electric -and there are many more. Our engineers

will be glad to give you full details and make specific recommendations to meet your need. Why not wrong?



#### Construction and Operation Of New Injection Carburetor

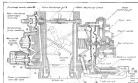
Revealing for the first time complete engineering details-tagether with apprecting technique—of new Stramburg small-plane injection contraretor designed for efficient performance in any position.

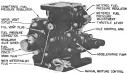
metalled in any position-updraft, unless thruttle is elected while coging en a dephrama and not by a float therefore, so or most moviero earliery main, each of which has its part free-

enrichment regulates flow of fact in tiffer the engine or carborator air of vostari processe and feel pressure

on left is engreeded draudy to make

by some (6) bearing on center of dis-





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Seven. The years may be severed. The severe severe

A company of the comp

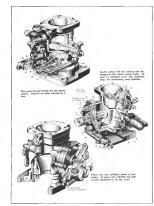
Mil melling armount descends assessed. One to very free to depth and of the other descends of the other descen

AND IGHE CUT-OFF

MECHANISM

where (13) motioning on solve of the Student ancientum residue is all sexualed field pleasure on dightheum proby viside freeze field and the discoulher bland field with, survey discharges the student field with, survey discharges to interested field or conting (see 11) the compressability for the innersest of a day which conjugately count of (a). The probability of the innersest of a day which conjugately count of (a) the probability of the innersest of a day and the country of the country of the land of the country of the country of the field present originated with the field present originated by the field present originated by the country of the country of the country of the country of the field present originated by the country of the field present originated by the country of the cou

> to weekers meeting and adjust-AVIATION, December, 1945



most of spring behind the dasplerages. Ing fast flow and pressure through the

thranes (2) and (4). As setim of the repetance arries the sorters about spring belief (4) is looked at (23) by tend to done them. unded by first pressure on (2), causes valve man (6) to more (2) to left, opening-No. 70 draft-is too small to control at full risk. Once deposits cause leakage so all raternal valves are. Operate webble remo until arresare so

As the copyage of sooner valve (1) deareds to a large extent open the pest- appears an locked or find does not flow from of the large displanates (4) it ma- evenly, or if eigenc stops after starting upon the difference of prossure hoteren work wouldle med feel peaches level of where course valve (20) closed but suction on right, becoming more and more comd as air flow is permitted. July Con-Off and throats at above 1.200

position of the papper valve operated the pressure behind the deaphrarms which close the idle essent and dis-

full upon to full closed. The punish ately dress to less than Jon. valve (18) allow of this below down. Convert also closes and the contents of the ear- external relotant and also extend much. axion to contrain, user No. 45 critiopen fiel valve at tank. Set missiane

-hittr-course Foll Fout Plan and

With proser. Set minture control at

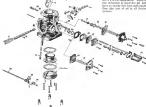
wobble pamp until engine-drawn states starter. When copied starts move may takes over and held an opening to give is weeped. If engine is cranted

about 900 rars for five scenarios. After

Melmed feel Pressure edisplaces in

Take rper and complete overcare readrine idlar used as carboneter witting

are, site Grade 1005A conferedor to











#### ANALYZING THE ASPECTS OF FUTURE FLIGHT

By C. E. PAPPAS, Child of Austropasia, and M. G. HARRISON, Association Method in Countries Applies Applies from Concluding this investigation of high-altitude high-speed exercition. details are presented concerning superseeis flow, by, required,

and extreme-balabt atmassheria angliticas.

number between 0.85 and 1.2, as: the p- and the a- velocity commonwell aircraft will, or all annhabites, in the close e = 21 (1 = cheet) at steady sirfler conditions. The next core, Fig. 7 has been objected. The the stracks state from condition. Since lighted by the plane warm starting within a consell region known as the from the forward and unitime edges of

the lifting surface, and the induced Considering the foregroup streamline serior. On the cone safe the a-'All reference are editated at ead of For T. Expressability of reclarge-

State high speeds on dense low aty- and the averagements become into fir at great allitudes when very high-

and only the draw resulting from wave

vetilization of this fact our he seen in

2 and at \$3,000 ft. CommandNe with

this 15,000 by it an air foil whose consu-

leading and trulling odys angles-as

strial corresponder to the G. H.

envertional manner. Hence is bebly arrested by ruckets, in an efficient Proceeding on this basis, the min-

wincey of the propertie. Since the 4 by (17,500 pt) at 17,000 such \. the earth will tern 8 × 1,000 = 750 mg Fig. 5, Added speed required for trainment at the country. This distance is a small consisted that while the earth's reta-

the orbit, r the red as of the carth, or

tending edge of mag.

of the distance, we obtain:

Fig. 18: 8to, per posed of simpless weight.

1/2 = 7 = 7 2 2 2 2 2 2 2 The outeral energy with reference effices at P is 87/e, and the attraction of the earth varies in the reverse arears. In the energy at Industries

Hence, the total energy of the mark-71410-41 The energy at the surface of the

 $\operatorname{sw}\left[\frac{\mu}{2\pi i \pi^{2}}\left(\frac{L}{L}\right) - \frac{\tau}{2\pi i \pi^{2}} + 1\right]$ 

 $N = mpr\left(1 - \frac{r}{4r}\right)$ 

House, for this received energy to be mentioners, "a" must be an large as cal and final culete. In Fig. 13, r is

B-8-18-1 Or in terms of r and 6.  $(r\cos T-c)^2+r^2\sin^2T=1$ 

5- [= ((-m+)+1 4 4 ( ( - + + 1 /2



Fig. 17 (hrls). Bragnam showing minimum armogy importances for preductible Right. 4,000 mi Fig. 12 (Boles ), Effective which at anniable fluid with consent to seed,

Section the derivative open to zero. height could to the allitude incremente - Family which when relutivated in equation 2 However, according to the gas law,

\*- \$ (2 + ex f) Publishe they value to Eq. 1 for the trade

 $E = m_{\theta} \left( \frac{dk}{1 + dx + 1} \right)$ 9--- $\frac{1}{n}mP^{2} = B = \exp\left(\frac{\sin\theta}{1 + \sin\theta}\right)$ 

The reasonan although his ear - r  $e/2(\cos\theta - 1 + \sin\theta)$ 

Almenderic Condition Pressure, density, and temperatures Since flight at nationic alreades in beights. The sateresting phonomena temperature, elementing of stransphere, presence of seas and meteoric

According to Humberon's the

Pressure (#) decreases with an in-

Rp. 13. Dispuse sleedup

Using this equation and the gas law,

teracent th portion, the energy lib. 39 14 × 191 × 0 × 191 × 20 × 1.4 × m Q 384 Sorba per sur

where 1.6 × 37" is the number of This quantity of best is entirely Heating of surface of body as reside

whereve enterestes the difference of 1 ros.one v For a body of 900 cm. (30 ft 1 lover the respectiv (C) will be approximately C = 4 × 900 × 3018 female

1/2 C P = 1/2 X A X 900 X 10\*\* X (00)\* 1 LA X 10\* waters. AVIATION, December, 1865 new's rang. The sletter of a given substance to enst radiation when

unity and I m a. Under these condi-Total radiation from a perfect radi-

ator is directly proportional to the 5799 X 39" erg ov " sec," (ep," or 8.22 × 39" col. on." mis." dor."

als." The low effective temperature other hand, 36% of the moldest own energy is directly reflected or differed \$30 V \$27 V (\$600+4.25 V 154 = 1.00 cal per min, per so, on parallel to the earth's serioo. The effective re-

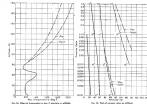
The earth rediates energy at a rate

controlled to a body at 245 day, C.

formula for radiation the confidence. P = -95 × 10 = 1.2 × 10\* tryity so the earth and its stroughers (with the assumed prometry, diffusion now be necleded with reflection), at sents registron and reductes as a black excellibration necessariation in attent has

> T = 265/4-/2 = 207 day, C abs. or - 85 Thus, a wide range of temperatures may be expected, depending on the

Temperature of body when immersed mately 1,700 day F. Unior Mc

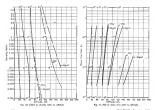


formal to be 48 day. E. also or -400 days is 30 × 6/3,207, or approximately 1 ps 190,000 Thus, one sould expent, an OAPGS In per ou it. The authors are unable to explain 180 on above the earth is all the order tion vs. all'inde at great heights has

stationary careared to the nations

mary sir is about 6 × 10"cm, or a 400,000th port of an in." When all atmacabers ner day in 100 anns. Hence, Ib., then there would be 100 × 2000 × 1,000 = 2 × 10° particles of dungerlength of the mean free path is M-6s × 4007 : 2 × 27 to mi. There N. Cherefore, I curticle our as not per

the free path to of the order of 10° cm as less as 10° ms, per ce. (9-68%) >



#### Landing Analyses For Flying Boats and Seaplanes

By ERNEST G. STOUT Steff Engous in charge of Hydrodynemou, Development Steam Steff, Countried of Mallor Altered Corp.

Was you column haden sta-Shipping - eacy conformed - was quickly conformed when wer paramituted increased from heat articities. Leading becards at stability conscioustons were applied rowarded beses, in unsheltered gross, and with greatly "upped" almost optically to the takent surprise. loads called for alimination of this phasemeson. And to safequard borro mason treffic 3t's still "Horsby desor" . . . Heal above in dynamic instability was conceded to these detailed studies. Londing lantshilling Factors

the cure for the one condition arrow. Slepping can now be producted socoolflate in house, night, or your or in vig. Instability resulting from the figur salpping and some of the predoculant. -where the hull annually leaves the variables revolved also their effect

that a planing foreledy alone, with respond of the direct cause. How-

Fig. 14. Noning flow laws and

recessity for training large members of office under view warters could

flows at deapy green weight, from

cut. With the assessed of your flower



complete veretilation, a sufficient volume try from a production and tooling despered only by rubuiding the suite velpas. Swampe of the ser oneso across of this flow of water, a regues of negatically every festance. In Impossible, ward to obtain takeoff stables. Fire-

and the ventilation of the alterbody vertilation is not obtained rapidly, the The minimum step provided in c.

body will be subjected to a sesetion region sig of the step, which will tend cretions of heap countries and asso-

#### Yest Preceders

A typical powered dynamically-new the rank model broder a 72.0 work crib, the model will reproduce all The swifteds were originally based op-

early experimental work does by the Derzicht in the early 20% ) clientrating a typical supplementary

the other. Since the decision as to methods is obtained. This comizes

For the landing conferention a

range of stability to checked for the Pollowing of this propodure will as-

"Petron, W. Q. A. and Quant, H.



the bear traffer and were traffer in. With the base ster measurers untilstep to retrered to maintain stability

and resistance at the lump by as much minimum depth of step is obtained



Fig. 18. Sprint Aid seek Antelleton of applications modulated

2 The Vitrac etc. (with ages, the hell is sufficient, and the ducts

For Hustratue, a typical energic 4 Supplementary ventilation does donners madel. Effect of increased



the bredley or contact trics starts. The full stale arphase checking very

value of 10,5% of beam. In other words, a 130% learness in step depth posted curetarys us the property was

air behind the lates sizes, and this field other by deep steps or vontileties.

AVIATION, December, 2046

#### STANDARDS ENGINEER STILL FACES HIGH HURDLES\*

FIG. 00 STEEL IS a host engineering so overhead, necessary perlups but not productor, so far as getting on with error that the benefits are too inter-

overificated by continues from other

Seasony Through Enduries. weight and space. The table below From Eladardistics Tengencer's ager processed by order belies ANG properation of this material the agricu-tor of the process of the agriculture and the attempt project from Tenna V

Next is an entropic of arrayed inntibon without critical theurte: (2) but R. R. Michalt, Lockhood bydraudie.

For greater general standardization offert, a defaits seed is indicefed for more active support from engineering menotement-particularly in the eirerest industry. In addition to presenting seems exemples of cash dividends and improvement in product modify or a result of clauderdiseties, the eather notes trends in this important Sold sloted to ease the problem of designing for production. and Softer bolt-the weight saving. ANSIO sorter carry about as a result

By E. C. SOULTON, Services Services that Sends Stone Co.

led to the NAS standard constant to a arer \$600 000 or online environit involved.

determines about design. With the

for comment; then a conference was

error Their out will be about the different vendors (Wirred Pinally

In 1944, Lockheed as a result of their



floor proposed MASC policy standards. Fro-

A type of sovere which standards

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tion brings about major empreyaments countriesed 15 propert of the 1500 red to been overhead over reduced

range | they are here and now. They The fields for application of cundardular eracials are rapidly to the mulity and soundness of that

Soller Acceleral qualities are purpose at

In a new of difficult field, 90 nement

of the offert may be expended before





## From "Eddie" Stinson's TINSON HAS STOOD F

# First Plane in 1926

STRENGTH, STABILITY, SECURITY

1926 ... The seriest plane health by "Widde" Streets and his measuring associate

give a new recognition of personal asceraft. In the fitzmon James he flaw ann stay from Betters to Messen City in 1926.



1926 . . . One of a love line of firsts by Streets services, a "Thirrotter" regress.



WORLD WAR H . . . The strength and stomms of the Stance 'Flying Josep slore with its extreme managementality under bottle condition were descentively

From its stability steel framework all the way

back strong and pureed to stay beautious security. tradition of Stinoon airplanes since the curbest of flying field from pasture lot to modern surport.



100. Powered with a Franklin 150 horsepower engine, the Vapoger 100 will make at



POOMY COMPORT! Disser of team for



UP AND AWAY! No seed for a long runway.

RUBBER COMPANY

1230 Stath Avenue NEW YORK 20, N.Y.

Edited to "Billion Earlo Frenzest" - agreemen of solite lay the great intensity of dismost - or and Federal Anneauses Cognition and Comments - or the Federal Anneause Cognition (Edit Soliteral), Earloy of Soliteral - print in Cyl & Edit U



#### Strong as a Stinson, too, ARE LIGHTER, STRONGER U. S. ROYALS

strength, stability and security, From the "Flying Jeep," they were made with bodies of rayon for the extra-strength.

plane tire performance recon and of nylon are ready now to



rayon, set the standard for the service type and age of airpinge from twoseaters to super-transports . . . U.S. simply or "element" parts, standardiza-Nies spens mother extremely lapar-

under the simplime designer's countrel

With other parts or assembles more he sudwent to the individual vicebase

of many engineers during its standardscattle, should be lighter, superior fewer With Iscour contrepents.

cible, sometimes without conscious in-An example of far reathing imper-

Adapt of Dourles This event, onesever of leading technical specialists appropriate a specification orthogology

limiting environmental conditionary. Army meta-bline specifications may made as extremes of temperature, once- well determine the extent to which ruce, hursday, whoseen, and dirtconditions peculiar to electrical, lysdreate, mechanical, and heat ex-

Ties the reado of this grarmen. velopment appears clear. The neebleves



Another cooperative effort which proposition. Drawn on at the record of the Western Welfare Committee. rally would specification for insurerquality production with mesonable reindustry will go to propering in a cooperative standardization work offers possibilized for raising quality levels

and advences. As this is done for

placed new and different responsibili-

environmental conditions, farned techofficer, the industries, outdoorly collect

cics already hardling attends standards.



oneier clump (right) was employed on co-

radio. Sust a newsp made possible for a considerable degree of diplomacy rach inflance was in connection with other

Reviews both in Importance to the

by WCAB It is difficult to appround confity of both military and represented

#### Beech Marketina C-P Props For Low Horsepower Ranges

Company is delivering line of AL725 has positive-witch alconous

fitted with mercal or electric cocknit control. Minimum of mering ports, and ease of installation are key features.

pleged special controllable pitch takeoff and slaub performances of

15 to 26% in comparison to those R-200 scripe for employ of 150 to 225

united models, either when the engine

Converteg a manually-controlled



#### OPEN HOME SALES SCHOOL FOR DEALERS-DISTRIBUTORS

obtained in the aviation industry

By K. H. HOLMGREN. etteland is after industries

Associate Streets, Ashense Inditute of Profusional Sales Stateles

Already educated by "big those" Enthsians menufacturers and mony individual apprehens, new correspondence source nims to not evietice mercheedising on some level as that so successfully

The "big three" Tightplane manufactorcry-Arrense. Place, and Terles.

recomble for a reason part of the ex- to meet connection seek as been as minutes of the family our rearlest in the they are programmy and can configure country to a point where inmediately to expell their new neighbors. before the war \$2,000,000 people in . Alread businesses have increased.

from 1,000 to 1,000 to the feet also

storage, Hight instruction, and charter by a well-clear value of business. In-Your Ability for Aviation Selling

case of a life insurance company emincreasing volume of agralance acres-Similar results certainly should be Institute was organized in 7943 as a

> nerchandising problems of the indus-AVIATION, Documber, 1965

try, we set about to create two definite

and techniques proved encounted



habiture of melanisms being policy and interior of soling which are applicable on applicable of soling which are gaplicable on any for an-for all mine personnel by Auronos, Farri, and Taylor- order, but one for pure, accounts, and nevine.

#### SWARF GEORGA THURS



Explical impressive amplituding floor is adaptable office were provided by setting Author Contin points and the

Let us antidiary when one be form on and off values is been do increase transactions as belong to increase transactions or the control of the

unity, and its many instituces have been possibilities. 2. Smithle water bying area ofnoisy tools at or over the heart of about every institute of the heart of about every institute of which people on measurement times to which people would of these natural supports that our he put on disturb timestate use. 3. Interest in volve fring was accounted to the control of the contraining standily helder the variety of the control of t

I arrax no which people clean here been called "manuar!" Their air many drien and the manuar augment has can be notice fairing was in the control of the control of their contro

AVEATION, December, 1945

By DONALD D. COOKE, Climano, Sequino Seu Gaznitre, Serphen Phine Ann.
Large Investments are not alreagy associated to successful appreciate,
Se says this sequines prepared, who first climated checklot of
"rendy-mode" landing areas, thus presents a detailed checklot of
the oregaziory "middle", beauther with all his methany? "have,

were restaut, it says well he first in more it stress one principle of the designation of the stress of the stress

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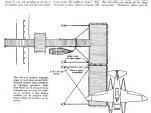
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the barre served fer landing and tak- ramp. Fuel tank, pump, and hose the outboard and it mark until the waterlike is at the turntable center and

palls itself off by its own power the siese. The plene is taxied cate tavasable with his broken or engine sets an attendent can block her wheels fore and aft for safety. The sucup it perticularly valuable for use at the

water. The ramp permits the plane Coon. by Franklin Farrett by and u Fastened to a mearing, it is free to



latte eleverner between the fleats and freet peer storrable. Two steel class- takes and their shoulders buts solidly sides of the inchine. For takeoff the and minorflaments equipment can be kept of a locker on the floor. Its use-Otlogg, however, is limited to Parke

Two-Wheeled delin for Sight proplones This dolly, the original of that is her close to the ground. Recframed structure with rectempular operation, the dolly is reifed down the sixture is above water. The phase hazled up the ramp by winch or reactor. With an attendant streeter the didly it can proceed from that some

Reacting Gear

advantures are the fact that the place so altered ecousies spraceful more space in a hanger than normally, Delly by making it possible to pick up and deposit a respiese while it is on the ground with free small promused; holes. The wheels are then craphed

The plane is topped back on its slory cartings and blocks observed under the

the story. With the place stoned back. railed forward, and the plane must be Eds. Three-Wheeled Party The

over the front wheel and a steering wheel frame. To pink up a plane, the dulty is rolled between the floats and the promps water

the wheels must be comparatively scooner lifting her in placed between

able to have one pair of delites anoth the propeller but. By succes of a able for each craft in action service, consider presented pear the front has one size dolly can be used under a however, tryphys tremendous stayed best arrangement for those operations

The reinferent practical size in an prenamately 22 x 11 ft III mere floor wheels mounted at each corner, the spart until the prompt soler the sole expectly is needed, additional waste car-



be added. It should have solesh boards—the bottom in sand or road, a 100-th.

vided with same sort of tender. If a plane goes safralt or sts engine statts

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AVIATION, December, 1945

#### TACCING THE BASES

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the Model V. s. high performs connection of wing flags with the stable state side-law-side two placer one. Distr. and higheded in a flathe opened



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longitudinal members at legets on front lags opens automatically when the

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#### AIRLINE FARNINGS PEAK SIX MONTHS OFF?

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However, the estimate in commonly

By RAYMOND L. HOADLEY, Francis Steel, "Arlested" Almost believ has been the continued climb of transport reverses and stock prices—a climb that ear analyst says may hit e ceiling as lead factors decrease and fincecles for additional

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## Bellcrank Production Boosted By Switching Weld Location

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Fig. 1, Location of violed fillers at early-de covers of helicons amonths (helt) if her widing and may be applied witing histolorance whereas will listele applicables there is insufficient space for and, become proper wild in not greately.



Fig. 2. Grosposics of hallowed consulties below and other filtely wave changed. Filter with specified for our shows of (a) sould not be particular because of specific interferon, and whitesph approximately strong, come parts were rejected between of interferior work passively and optimized at a philodoxia distributed datable. Exclusion area of (b) were properly and untilly world after change.

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## Production Costs "Clipped" With Clips

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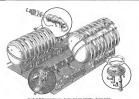




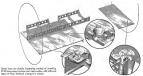




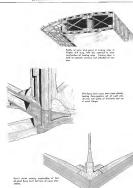
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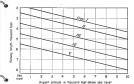
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AVIATION, December, 1962

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AVIATION, December, 1981



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AVIATION, December, 1846



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up to 230 vales a.c. 60 cycles. STRUTHERS-DUNN, Inc., 1321 Arch Street, Philadelphia 7, Pa.

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AVIATION, Seconder, 1965

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AVIATION, Donnber, 1945



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AVEATION, December, 1945

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AVEAUGON, December, 2015

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AVIATION, Dec. 48

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AVIATION, Incester, 1945

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#### Those Airplane "Eyes" (Continued from page 133)

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This is a junction box of the Loddheed Lightning P-18. Crowded, not it? In it are the vital and complicated power and control cicues of a single engine of the funous fighter. Its compactness is due, in part, to the use of Camoon Connec-

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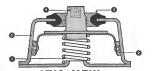
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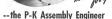
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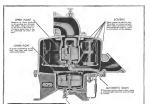
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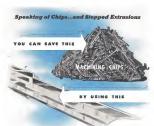
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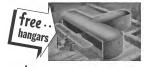
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